

CLAIMS

1. An NRD guide transition comprising:

a dielectric waveguide which is sandwiched between parallel conductor plates and has a gap which is less than a $1/2$ wavelength;

a microstrip line which is provided on a side surface of a conductor rod opposite to the dielectric waveguide, the conductor rod being adjacently arranged in substantially parallel with the dielectric waveguide; and

a coaxial line which pierces the conductor rod and connects the dielectric waveguide with the microstrip line.

2. An NRD guide transition comprising:

a first dielectric waveguide which is sandwiched between parallel conductor plates and has a gap which is less than a $1/2$ wavelength;

a second dielectric waveguide which is cascade-arranged with respect to the first dielectric waveguide in a longitudinal direction;

a microstrip line which is provided on a side surface of a conductor rod opposite to the first and second dielectric waveguides, the conductor rod being adjacently arranged in substantially parallel with the first and second dielectric waveguides;

a first coaxial line which pierces the conductor rod in the vicinity of one end portion thereof, and connects

the first dielectric waveguide with the vicinity of one end portion of the microstrip line; and

a second coaxial line which pierces the conductor rod in the vicinity of the other end portion thereof, and connects the second dielectric waveguide with the vicinity of the other end portion of the microstrip line,

wherein the first dielectric waveguide, the microstrip line and the second dielectric waveguide are cascade-connected.

3. An NRD guide transition comprising:

first and second dielectric waveguides each of which is sandwiched between parallel conductor plates and has a gap which is less than a $1/2$ wavelength;

first and second conductor rods which are provided between the first and second dielectric waveguides and arranged in substantially parallel with the first and second dielectric waveguides;

a microstrip line provided between the first and second conductor rods;

a first coaxial line which pierces the first conductor rod and connects the first dielectric waveguide with one end of the microstrip line; and

a second coaxial line which pierces the second conductor rod and connects the second dielectric waveguide with the other end of the microstrip line,

wherein the first dielectric waveguide, the

microstrip line and the second dielectric waveguide are cascade-connected.

4. The NRD guide transition according to claim 3, further comprising:

a first vertical strip line which connects one end of the first coaxial line connected with the first dielectric waveguide to the first dielectric waveguide; and

a second vertical strip line which connects one end of the second coaxial line connected with the second dielectric waveguide to the second dielectric waveguide.

5. The NRD guide transition according to claims 1 to 4, wherein each of the conductor rod, the first conductor rod and the second conductor rod has a $1/4$ wavelength choke structure formed on upper and lower surfaces thereof.

6. The NRD guide transition according to claim 1, wherein a liquid dielectric material is filled on contact surfaces of the microstrip line and the coaxial line.

7. The NRD guide transition according to claim 6, wherein the liquid dielectric material is a liquid dielectric material having dry curing properties.

8. The NRD guide transition according to claim 7, wherein the liquid dielectric material having dry curing

properties is enamel.

9. The NRD guide transition according to claim 2, wherein a liquid dielectric material is filled on contact surfaces of the first coaxial line, the second coaxial line and the microstrip line.

10. The NRD guide transition according to claim 9, wherein the liquid dielectric material is a liquid dielectric material having dry curing properties.

11. The NRD guide transition according to claim 10, wherein the liquid dielectric material having dry curing properties is enamel.

12. The NRD guide transition according to claim 3, wherein a liquid dielectric material is filled on contact surfaces of the first coaxial line, the second coaxial line and the microstrip line.

13. The NRD guide transition according to claim 12, wherein the liquid dielectric material is a liquid dielectric material having dry curing properties.

14. The NRD guide transition according to claim 13, wherein the liquid dielectric material having dry curing properties is enamel.

15. An NRD guide mode suppressor, wherein a conductor is arranged to be appressed against a bent portion of a dielectric waveguide of an NRD guide, and a liquid dielectric material is filled between the dielectric waveguide and the conductor, the dielectric waveguide being sandwiched between parallel conductor plates and having a gap which is less than a $1/2$ wavelength, the NRD guide propagating an electromagnetic wave through the dielectric waveguide.

16. A coupling structure of a dielectric material and a conductor according to claim 15, wherein the liquid dielectric material is a liquid dielectric material having dry curing properties.

17. The coupling structure of a dielectric material and a conductor according to claim 16, wherein the liquid dielectric material having dry curing properties is enamel.

18. A coupling structure of a dielectric material and a conductor in which an inner conductor of a coaxial line pierces a dielectric substrate of a microstrip line and the microstrip line is coupled with the coaxial line, wherein a liquid dielectric material is filled on contact surfaces of the inner conductor and the dielectric substrate.

19. The coupling structure of a dielectric material and a conductor according to claim 18, wherein the liquid dielectric material is a liquid dielectric material having dry curing properties.

20. The coupling structure of a dielectric material and a conductor according to claim 19, wherein the liquid dielectric material having dry curing properties is enamel.